

## SEQUENCE LISTING

<110> Morgan, James Alun Wynne  
 Jarrett, Paul  
 Ellis, Debbie  
 Ousley, Margaret Anne

<120> BIOLOGICAL CONTROL OF NEMATODES

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<140> 09/889,874

<141> 2001-07-23

<150> PCT/GB00/00219

<151> 2000-01-24

<150> GB 9901499.5

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<170> FastSEQ for Windows Version 4.0

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Arg Val Gln Thr Arg Arg Ile Leu His Thr Asp Asp Arg Thr Val Met  
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Gly Ile Pro Met Glu Gly Val Phe Ala Asn Leu His Arg Arg Pro Leu  
50 55 60  
Ser Gln Arg Thr Val Lys Arg Leu Arg Pro Ala Val Ile Gly Ile Ser  
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Arg Tyr His Arg His Pro Asn Thr Pro Thr Thr Thr Asp Glu Arg Ile  
50 55 60  
Thr Arg His Arg Phe Thr Leu Ser Gly Gln Leu Ala His Ser Ile Asp  
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Pro Arg Leu Phe Asp Leu Gln Gln Thr Asp Asn Thr Val Asn Pro Asn  
85 90 95  
Met Ile Tyr Asp Thr Ala Leu Thr Gly Glu Val Val Arg Thr Arg Ser  
100 105 110  
Val Asp Ala Gly Asn Asp Leu Ile Leu Asn Asp Ile Thr Gly Arg Pro  
115 120 125  
Val Leu Ala Ile Asn Ala Thr Glu Val Thr Arg Thr Trp Gln Tyr Glu  
130 135 140  
Asn Asp Thr Leu Pro Gly Arg Pro Leu Ser Ile Thr Glu Gln Pro Ala  
145 150 155 160  
Gly Glu Ala Gly Arg Ile Thr Glu Arg Phe Val Trp Ala Gly Asn Ser  
165 170 175  
Gln Ala Glu Lys Asn Ser Asn Leu Ala Gly Gln Cys Val Arg His Tyr  
180 185 190  
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Arg	Asn 370	Gln	Lys	Val	Val	Pro 375	Glu	Asn	Thr	Tyr 380	Val	Tyr	Asp	Ser	Leu
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Ser	Asn	Tyr	Ser 420	Arg	Thr	Tyr	Asn 425	Tyr	Asp	Arg	Gly	Asp 430	Asn	Leu	Thr
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Val	Leu	His 565	Val	Ile	Thr	Ile	Gly	Glu 570	Ala	Gly	Arg	Ala	Gln	Val 575	Arg
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Met	Arg 595	Tyr	Ser	Tyr	Asp	Asn 600	Leu	Ile	Gly	Ser	Ser 605	Gly	Leu	Glu	Val
Asp	Gly 610	Asp	Gly	Gln	Ile 615	Ile	Ser	Met	Glu	Glu 620	Tyr	Tyr	Pro	Tyr	Gly
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 690 695 700  
 Arg Tyr Val Phe Phe Pro Phe Ile His Glu Asp Arg Ile Phe Arg Leu  
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 Ala Ser Ala Asn Val Tyr Arg Thr Glu His Asn Lys Ser Asp Ile Ile  
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 Ala Val Val Glu Asp Lys Ala Leu Asp Ser Lys Leu Phe Thr Asn Ser  
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 Ser Pro Asp Ile Lys Glu Arg Leu Leu Asn Asn Ile Val His Asp Leu  
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 His Ser Ala Glu Gly Lys Gly Ala His Ile Thr Val Thr Ser Thr Gly  
 850 855 860  
 Thr Asn Glu Lys Met Arg Tyr Ser Ser Ile Ile Glu Asn Lys Gly Glu  
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 Thr Phe Tyr Gly Ala Lys Asn Glu Lys Val Ile His Leu Lys Asp Gly  
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 930 935 940  
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&lt;213&gt; Xenorhabdus bovienii

&lt;400&gt; 4

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 Ala Thr Arg Cys Arg Leu Pro Ala Ala Ser Val Val Val Ser Thr Ala  
 35 40 45  
 Pro Val Ala Ser Ala Val Leu Arg Val Val Lys Phe Ser Gly Ala Ser  
 50 55 60  
 Arg Ser Phe Gln Ala Gly Ser Leu Phe Pro Cys Gln Ser Ala Ser Val  
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Tyr	Gln	Cys	Trp	Leu	Gln	His	Ala	Ala	Thr	Gln	Leu	Ser	Glu	Ser	Asp
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Ser	Pro	Lys	Arg	Asp	Ala	Glu	Ile	Leu	Leu	Gly	Tyr	Val	Thr	Gly	Arg
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 Lys Ala Ser Gly Asn Thr Phe Thr Gly Arg Leu Ile Pro Thr Gly Arg  
 50 55 60  
 Pro Thr Val Val Thr Ile Asp Lys Ser Gly Ala Asn Thr Ala Ala Leu  
 65 70 75 80  
 Thr Leu Leu Asn Ala Glu Gly Glu Pro Gln Gln Gly Ile Glu Ile Arg  
 85 90 95  
 Gln Asn Lys Tyr Leu Asn Asn Arg Ile Glu Gln Asp His Arg His Val  
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 Gln Thr  
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&lt;211&gt; 119

&lt;212&gt; PRT

&lt;213&gt; Xenorhabdus bovienii

&lt;400&gt; 9

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 Ala Phe Lys Leu Leu His Tyr Pro Val Asp Ile Met Ala Gln Cys Val  
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 Arg Trp Ser Leu Thr Tyr Ala Leu Ser Leu Arg Asn Leu Glu Glu Met  
 35 40 45  
 Met Ala Lys Arg Gly Ile Phe Val Asp His Ala Thr Ile Pro Arg Trp  
 50 55 60  
 Val Leu Arg Leu Val Pro Leu Leu Ser Lys Ala Phe Arg Lys Arg Lys  
 65 70 75 80  
 Lys Pro Val Gly Ser Arg Trp Arg Met Asp Glu Thr Tyr Ile Lys Val  
 85 90 95  
 Lys Gly Gln Trp Lys Tyr Leu Tyr Arg Ser Val Asp Thr Asp Gly Gln  
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&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Xenorhabdus bovienii

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<213> Xenorhabdus bovienii

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 Asn Leu Gly Asp Trp Ser Phe Asp Glu Arg Val Ala Glu Val Phe Pro  
 35 40 45  
 Asp Met Val Lys Arg Ser Ile Pro Gly Tyr Ser Asn Ile Ile Ser Met  
 50 55 60  
 Ile Gly Met Leu Ala Ser Arg Phe Val Thr Pro Gly Ser Gln Ile Tyr  
 65 70 75 80  
 Asp Leu Gly Cys Ser Leu Gly Ala Ala Thr Leu Ser Ile Arg Arg Ser  
 85 90 95  
 Ile Asn Ala Asp Asn Cys Arg Ile Ile Ala Ile Asp Asn Ser Pro Ala  
 100 105 110  
 Met Ile Glu Arg Cys Arg Arg His Ile Asp Ser Phe Lys Ala Ser Thr  
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 Pro Val Glu Val Ile Glu Gln Asn Ile Leu Asp Thr Asp Ile Gln Asn  
 130 135 140  
 Ala Ser Met Val Val Leu Asn Phe Thr Leu Gln Phe Leu His Pro Asp  
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 Asp Arg Gln Lys Ile Leu Lys Lys Ile Tyr Ala Gly Leu Lys Pro Gly  
 165 170 175  
 Gly Val Leu Val Leu Ser Glu Lys Phe Asn Phe Glu Asp Gln Lys Ile  
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 Gly Glu Leu Leu Phe Asn Met His His Asp Phe Lys Arg Ala Asn Gly  
 195 200 205  
 Tyr Ser Glu Leu Glu Val Ser Gln Lys Arg Ser Met Leu Glu Asn Val  
 210 215 220  
 Met Arg Thr Asp Ser Val Asp Thr His Lys Ser Arg Leu Lys Glu Val  
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 Lys Thr Ser Gln His Gly Gln Phe Ser Ser Trp Val Lys Ile Leu Glu  
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 Asn Leu Pro Glu Ile Lys Pro Ser His Leu Asp Leu Lys Asn Gly Val  
 50 55 60  
 Ile Ala Ile His Glu Pro Asp Leu Ser Lys Gly Glu Lys Ala Arg Leu  
 65 70 75 80  
 His Asn Ile Leu Lys Ile Leu Met Pro Trp Arg Lys Gly Pro Phe Ser  
 85 90 95  
 Leu Tyr Asp Val Glu Ile Asp Thr Glu Trp Arg Ser Asp Trp Lys Trp

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Gln	Phe	Glu	Ala	Ile	Arg	Lys	Leu	Leu	Gly	Asn	Asn	Gln	Arg	Ala	His		
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Leu	Leu	Pro	Leu	Gly	Ile	Glu	Gln	Leu	Pro	Glu	Leu	Gln	Ala	Phe	Asp		
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225				230						235					240		
Gly	Glu	Arg	Tyr	Ala	Gln	Met	Arg	Asn	Val	Tyr	Phe	Ile	Pro	Ser	Ala		
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Lys	Met	Leu	Lys	Val	Trp	Leu	Glu	Lys	Cys	Gly	Phe	Val	Asp	Val	Arg		
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Trp	Met	Lys	Thr	Glu	Ser	Leu	Val	Asp	Phe	Leu	Asp	Pro	Ser	Asp	His		
290					295						300						
Ser	Lys	Thr	Ile	Glu	Gly	Tyr	Pro	Ala	Pro	Leu	Arg	Ala	Val	Leu	Ile		
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Ala	Arg	Lys	Pro														

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&lt;211&gt; 100

&lt;212&gt; PRT

&lt;213&gt; Xenorhabdus bovienii

&lt;400&gt; 15

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			20					25					30				
His	Ser	Arg	His	Gln	Val	Arg	Phe	Phe	Leu	Leu	Lys	Glu	Lys	Tyr	Gly		
		35					40					45					
Ala	Ala	Leu	Ala	Pro	Ile	Ser	Gln	Ser	Ala	Ile	Arg	Tyr	Gln	Phe			
50					55					60							
Gln	Arg	His	Thr	Met	Lys	Lys	Gly	Leu	Phe	Ala	Met	Ala	Ser	Ile	Phe		
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Ser	Gly	Tyr	Cys	Gly	Gly	Glu	Leu	Phe	His	Leu	Leu	Thr	Asp	Pro	Ala		
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His	Glu	Ser	Gln														
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&lt;211&gt; 267

&lt;212&gt; PRT

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&lt;400&gt; 16

T00001-4288860

Ser Ser Phe Arg Leu Asn Asp Asp Leu Leu Thr Asn Ser Tyr Ser Glu  
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 Gly Phe Leu Met Ile Lys Leu Glu Ile Cys Cys Tyr Ser Ile Ser Cys  
 20 25 30  
 Ala Leu Val Ala Gln Asn Ala Gly Ala Asp Arg Ile Glu Leu Ser Ala  
 35 40 45  
 Ser Pro Leu Glu Gly Gly Leu Thr Pro Ser Phe Gly Ala Leu Gln Gln  
 50 55 60  
 Ser Leu Gln Arg Leu Ser Ile Pro Val His Pro Ile Val Arg Pro Arg  
 65 70 75 80  
 Gly Gly Asp Phe Cys Tyr Asn Asn Met Asp Phe Glu Ala Met Lys Asn  
 85 90 95  
 Asp Val Ala Arg Ile Arg Asp Met Gly Phe Pro Gly Ile Val Phe Gly  
 100 105 110  
 Ile Leu Ser Glu Asn Gly His Ile Asp Arg Leu Arg Met Arg Gln Leu  
 115 120 125  
 Met Ser Leu Ser Gly Asn Met Ala Val Thr Phe His Arg Ala Phe Asp  
 130 135 140  
 Met Cys Phe Asn Pro His Val Ala Leu Glu Gln Leu Thr Glu Leu Gly  
 145 150 155 160  
 Val Gln Arg Ile Leu Thr Ser Gly Gln Gln Gln Asn Ala Glu Leu Gly  
 165 170 175  
 Leu Thr Leu Leu Lys Glu Leu Met Gln Ala Ser Arg Gly Pro Ile Ile  
 180 185 190  
 Met Pro Gly Ala Gly Val Arg Val Ser Asn Ile Ser Lys Phe Leu Glu  
 195 200 205  
 Ala Gly Met Thr Glu Val His Ser Ser Ala Gly Lys Ile Val Pro Ser  
 210 215 220  
 Thr Met Lys Tyr Arg Lys Val Gly Val Ala Met Ser Ser Asp Asp Arg  
 225 230 235 240  
 Asp Val Asp Glu Tyr Ser His Tyr Ser Val Asp Gly Glu Leu Val Glu  
 245 250 255  
 Ser Met Lys Gly Val Met Ser Leu Ile Lys Arg  
 260 265

&lt;210&gt; 17

&lt;211&gt; 189

&lt;212&gt; PRT

&lt;213&gt; Xenorhabdus bovienii

&lt;400&gt; 17

Tyr Phe Gly Lys Asn Arg Arg Phe Val Ile Tyr Val Thr Leu Met Glu  
 1 5 10 15  
 Arg Asn Phe Tyr Gly Leu Phe Asn Gly Glu Glu Met Ser His Phe Ser  
 20 25 30  
 Lys Ile Ser Glu Leu Gln Asp Leu Val Ala Asp Leu Ala Gly Phe Glu  
 35 40 45  
 Gln Lys Leu Lys Gln Phe Glu Gly His Leu Gly Leu His Phe Glu Gln  
 50 55 60  
 Tyr Ser Ala Asp His Ile Ser Leu Arg Cys Asn Glu Ser Lys Ile Ala  
 65 70 75 80  
 Asp Arg Trp Arg Lys Gly Phe Leu Gln Cys Gly Gln Leu Ile Ser Glu  
 85 90 95  
 Ser Ile Ile Asn Gly Arg Pro Ile Cys Leu Phe Asp Leu Asn Gln Pro  
 100 105 110  
 Ile Val Leu Leu Asp Trp Lys Ile Asp Cys Val Glu Leu Pro Tyr Pro  
 115 120 125

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Ser Gln Lys His Tyr Val His Gln Gly Trp Glu His Val Glu Leu Val  
 130 135 140  
 Leu Pro Val Pro Pro Glu Gln Leu Ile Cys Glu Ala Lys Lys Leu Leu  
 145 150 155 160  
 Pro Gln Pro Leu Pro Asp Asn Phe Arg Met Lys Glu Ser His Pro Lys  
 165 170 175  
 Gly Lys Asn Glu Arg Leu Pro Asn Pro Ile Leu Ala Val  
 180 185

<210> 18

<211> 579

<212> PRT

<213> Xenorhabdus bovienii

<400> 18

Gly Asn Thr Val Asn Ile Gln Val Ile Leu Ser Glu Lys Ile Ser Asn  
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 Ala Leu Ile Glu Ala Gly Ala Pro Thr Asp Ser Glu Ala His Val Arg  
 20 25 30  
 Gln Ser Ala Lys Ala Gln Phe Gly Asp Tyr Gln Ala Asn Gly Val Met  
 35 40 45  
 Ala Ala Ala Lys Lys Val Gly Ile Pro Pro Arg Gln Leu Ala Glu Lys  
 50 55 60  
 Val Val Ser Gln Leu Asp Leu Gln Gly Ile Ala Ser Lys Val Glu Ile  
 65 70 75 80  
 Ala Gly Pro Gly Phe Ile Asn Ile Phe Leu Asp Lys Ala Trp Val Ala  
 85 90 95  
 Ala Asn Ile Glu Thr Thr Leu Lys Asp Glu Lys Leu Gly Ile Thr Pro  
 100 105 110  
 Val Glu Pro Gln Thr Ile Val Ile Asp Tyr Ser Ala Pro Asn Val Ala  
 115 120 125  
 Lys Gln Met His Val Gly His Leu Arg Ser Thr Ile Ile Gly Asp Ala  
 130 135 140  
 Ala Ala Arg Thr Leu Glu Phe Leu Gly His Lys Val Ile Arg Ala Asn  
 145 150 155 160  
 His Val Gly Asp Trp Gly Thr Gln Phe Gly Met Leu Ile Ala Tyr Leu  
 165 170 175  
 Glu Lys Ile Gln Asn Glu Asn Ala Asn Asp Met Ala Leu Ala Asp Leu  
 180 185 190  
 Glu Ala Phe Tyr Arg Glu Ala Lys Lys His Tyr Asp Glu Asp Glu Glu  
 195 200 205  
 Phe Ala Ile Arg Ala Arg Asn Tyr Val Val Lys Leu Gln Gly Gly Asp  
 210 215 220  
 Glu Tyr Cys Arg Lys Met Trp Arg Lys Leu Val Asp Ile Thr Met Ser  
 225 230 235 240  
 Gln Asn Gln Glu Thr Tyr Asn Arg Leu Asn Val Thr Leu Thr Glu Lys  
 245 250 255  
 Asp Val Met Gly Glu Ser Leu Tyr Asn Asp Met Leu Pro Gly Ile Val  
 260 265 270  
 Ala Asp Leu Lys Gln Arg Gly Ile Ala Val Lys Ser Asp Gly Ala Thr  
 275 280 285  
 Val Val Tyr Leu Asp Glu Phe Lys Asn Lys Glu Gly Glu Pro Met Gly  
 290 295 300  
 Val Ile Ile Gln Lys Lys Asp Gly Gly Tyr Leu Tyr Thr Thr Thr Asp  
 305 310 315 320  
 Ile Ala Cys Ala Lys Tyr Arg His Glu Thr Leu Asn Ala Ser Arg Val  
 325 330 335

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<210> 19
<211> 126
<212> PRT
<213> Xenorhabdus bovienii
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<210> 20

<211> 104  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 20  
 His Ala Arg Val Gly Val Leu His Ile Arg Cys Arg Val Ala Phe Lys  
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 Gly Gln His Ile Ile Pro Val Glu Asn Ile Val Cys Ser Thr Ala Leu  
 20 25 30  
 Gly Lys Ile Cys Ile Phe His Arg Ala Asn Pro Tyr Arg Phe His Asp  
 35 40 45  
 Phe Phe Gln Phe Val Phe Trp His Ile Trp Val Phe Leu Thr Asn Glu  
 50 55 60  
 Gly Ile Arg Thr Leu Asn Arg Phe Ile Gln Gln Ile Gly Gln Ser Tyr  
 65 70 75 80  
 Cys Ala Ala Gly Thr Gly Phe Glu Trp Phe Thr Ile Phe Ala Gln His  
 85 90 95  
 His Ala Lys His Val Val Phe Glu  
 100

<210> 21  
 <211> 120  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 21  
 Tyr His Ala Ser Phe Gln Leu Cys Arg Arg Leu Leu His Thr Phe Tyr  
 1 5 10 15  
 Ser Leu Asn Thr Gln Ser Ile Lys Thr Leu Leu Gln Ser Phe Arg Cys  
 20 25 30  
 Gln Gln Ser Gln Leu Gln Ala Ala Leu Ala Gln Phe Phe Ala Ile Gly  
 35 40 45  
 Ile Gln Asp Arg Ala Val Leu Ile Glu Thr Arg Glu Gln Thr Gly Gln  
 50 55 60  
 Ile Val Gln Val Cys Thr His Asn Met Trp Arg Thr Phe Thr Gly Asp  
 65 70 75 80  
 Gly Ser Asp Arg Phe Phe Lys Leu Gln Gln Ala Gly Cys Gln Cys Leu  
 85 90 95  
 Leu Ala Phe Phe Ile Gln His His Arg Gln Cys Gln Ala Val Phe Ile  
 100 105 110  
 Asp Ile Arg Thr Phe Lys Asp Arg  
 115 120

<210> 22  
 <211> 334  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 22  
 Phe Thr Leu Arg Glu Asp Ser Met Ser Asp Trp Thr Gly Val Ser Thr  
 1 5 10 15  
 Phe Asn Val Ile Leu Glu Thr Gly Leu Asp Asn Cys Asn Ile Tyr Ala  
 20 25 30  
 Asn Gly Leu Asn Met Ile Gly Val Ile Ile Asn Ile Thr Pro Thr Asp  
 35 40 45  
 Asp Glu Gly Asn Phe Val Asp Ile Asp Asp Val Thr Leu Asn Asp Asn  
 50 55 60

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Ile Lys Ile Val Asp Tyr Ile Asp Gly Ser Asp Ile Asp Gly Ser Asp  
 65 70 75 80  
 Gly Trp Phe Tyr Thr Gly Asn Pro Asn Glu Tyr Asn Thr Ile Pro Asn  
 85 90 95  
 Ser Gln Ser Tyr Ser Leu Leu Lys Ser Glu Asn Ser Gln Ile Thr Gln  
 100 105 110  
 Ile Lys Arg Tyr Val Ser Cys Ser Asn Thr Ser Arg Leu Arg Thr Lys  
 115 120 125  
 Ser Phe Ser Ala Lys Val Thr Thr Ser Gly Lys Val Ile Ser Ile  
 130 135 140  
 Thr Gln Asn Ser Ile Asn Ser Ser Arg Val Val Ile Asn Ala Ile Asp  
 145 150 155 160  
 Ala Thr Asn Phe Thr Asp Asp Glu Leu Arg Thr Thr Lys Glu Thr Arg  
 165 170 175  
 Phe Glu Asn Gln Ser Tyr Thr Ser His Lys Ser Ser Thr Asn Ser Leu  
 180 185 190  
 Tyr Val His Thr Trp Thr Ile Pro Arg Ser Leu Lys Leu Gln Asn Trp  
 195 200 205  
 Arg Trp Glu Asp Tyr Asn Asn Gly Trp Thr Trp Ala Gln Ser Cys Tyr  
 210 215 220  
 Tyr Lys Thr Gly Ala Asp Gly Gly Ser Glu Ser Thr Arg Trp Leu Ala  
 225 230 235 240  
 Ala Gly Ser Ile Phe Pro Pro Gly Asn Tyr Asp Gly Leu Trp Leu Asp  
 245 250 255  
 Asn Asp Ile Ala Leu Ser Gly Met Ala His Lys Ser Tyr Asn Val Asp  
 260 265 270  
 Thr Gly Ile Asn Gln Leu Ser Phe Thr Arg Ile Ile Gly Lys Gly Phe  
 275 280 285  
 Ser Trp Val Tyr Asn Ile Ser Gly Leu Asp Arg Gly His Ala Val Ile  
 290 295 300  
 Ile Ile Asp Gln Tyr Gly Asn Lys Tyr Arg Ile Leu Phe His Ala Gly  
 305 310 315 320  
 Tyr Glu Asn Ser Asp Pro Tyr Leu Ser Ser Ser Ile Val Tyr  
 325 330

<210> 23

<211> 1673

<212> PRT

<213> Xenorhabdus bovienii

<400> 23

Val Tyr Ile Lys Phe Leu Lys Leu Phe Arg Arg Ile Thr Met Ser Asp  
 1 5 10 15  
 Asn Asn Glu Phe Phe Thr Gln Ala Asn Asn Phe Thr Ser Ala Val Ser  
 20 25 30  
 Gly Gly Val Asp Pro Arg Thr Gly Leu Tyr Asn Ile Gln Ile Thr Leu  
 35 40 45  
 Gly His Ile Val Gly Asn Gly Asn Leu Gly Pro Thr Leu Pro Leu Thr  
 50 55 60  
 Leu Ser Tyr Ser Pro Leu Asn Lys Thr Asp Ile Gly Phe Gly Ile Gly  
 65 70 75 80  
 Phe Asn Phe Gly Leu Ser Val Tyr Asp Arg Lys Asn Ser Leu Leu Ser  
 85 90 95  
 Leu Ser Thr Gly Glu Asn Tyr Lys Val Ile Glu Thr Asp Lys Thr Val  
 100 105 110  
 Lys Leu Gln Gln Lys Lys Leu Asp Asn Leu Arg Phe Glu Lys Asp Leu  
 115 120 125

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Lys Glu Asn Cys Tyr Arg Ile Ile His Lys Ser Gly Asp Ile Glu Val  
 130 135 140  
 Leu Thr Gly Phe Asn Asn Asn Ala Phe Asp Leu Lys Val Pro Lys Lys  
 145 150 155 160  
 Leu Leu Asn Pro Ala Gly His Ala Ile Tyr Ile Asp Trp Asn Phe Glu  
 165 170 175  
 Ala Thr Gln Pro Arg Leu Asn Arg Ile Tyr Asp Asp Leu Asp Gly His  
 180 185 190  
 Asp Ile Pro Leu Leu Asn Leu Glu Tyr Gln Gly Leu Ile Lys Thr Ile  
 195 200 205  
 Leu Thr Leu Phe Pro Gly Gln Lys Glu Gly Tyr Arg Thr Glu Leu Arg  
 210 215 220  
 Phe Leu Asn Arg Gln Leu Asn Ser Ile His Asn Phe Ser Leu Gly Asn  
 225 230 235 240  
 Glu Asn Pro Leu Thr Trp Ser Phe Gly Tyr Thr Pro Ile Gly Lys Asn  
 245 250 255  
 Gly Ile Leu Gly Gln Trp Ile Thr Ser Met Thr Ala Pro Gly Gly Leu  
 260 265 270  
 Lys Glu Thr Val Asn Tyr Ser Asn Asn Asn Gln Gly His His Phe Pro  
 275 280 285  
 Gln Ser Ala Asn Leu Pro Val Leu Pro Tyr Val Thr Leu Met Lys Gln  
 290 295 300  
 Val Pro Gly Ala Gly Gln Pro Ala Ile Gln Ala Glu Tyr Ser Tyr Thr  
 305 310 315 320  
 Ser His Asn Tyr Val Gly Gly Gly Ser Asn Gly Ile Trp Asn Asn Lys  
 325 330 335  
 Leu Asp Asn Leu Tyr Gly Leu Met Thr Glu Tyr Asn Tyr Gly Ser Thr  
 340 345 350  
 Glu Ser Arg Arg Tyr Lys Asp Lys Glu Gly His Asp Gln Ile Val Arg  
 355 360 365  
 Ile Glu Arg Thr Tyr Asn Asn Tyr His Leu Leu Thr Ser Glu Cys Lys  
 370 375 380  
 Gln Gln Asn Gly Tyr Ile Gln Thr Thr Glu Thr Ala Tyr Tyr Ala Ile  
 385 390 395 400  
 Ile Gly His Asn Phe Asp Ser Gln Pro Ser Gln Phe Gln Leu Pro Lys  
 405 410 415  
 Thr Lys Thr Glu Thr Thr Phe Asp Glu Ser Gly Asn Pro Leu Thr Lys Val  
 420 425 430  
 Ile Thr Glu Thr Thr Phe Asp Glu Ser Gly Asn Pro Leu Thr Lys Val  
 435 440 445  
 Ile Lys Asp Lys Lys Thr Gln Lys Ile Ile Ser Pro Ser Thr His Trp  
 450 455 460  
 Glu Tyr Tyr Pro Pro Ala Gly Glu Val Asp Asn Cys Pro Pro Glu Pro  
 465 470 475 480  
 Tyr Gly Phe Thr Arg Phe Val Lys Lys Ile Ile Gln Thr Pro Tyr Asp  
 485 490 495  
 Ser Glu Phe Lys Asp Asp Pro Glu Lys Phe Ile Gln Tyr Arg Tyr Ser  
 500 505 510  
 Leu Ile Gly Ser Gln Ser His Val Thr Leu Lys Ile Glu Glu Arg His  
 515 520 525  
 Tyr Ser Ala Thr Gln Leu Leu Asn Ser Thr Leu Phe Gln Tyr Asn Thr  
 530 535 540  
 Asp Lys Ser Glu Leu Gly Arg Leu Leu Lys Gln Thr Glu Cys Thr Lys  
 545 550 555 560  
 Gly Glu Asn Gly Lys Thr Tyr Ser Val Val His Lys Phe Thr Tyr Thr  
 565 570 575  
 Lys Gln Asp Asp Thr Leu Gln Gln Ser His Ser Ile Thr Thr His Asp

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			580						585						590				
Asn	Phe	Thr	Ile	His	Arg	Ser	Gln	Val	Arg	Ser	Arg	Tyr	Thr	Gly	Arg				
		595					600					605							
Leu	Phe	Ser	Asp	Thr	Asp	Thr	Lys	Asp	Ile	Val	Thr	Gln	Met	Ser	Tyr				
	610					615					620								
Asp	Lys	Leu	Gly	Arg	Leu	Leu	Thr	Arg	Thr	Leu	Asn	Ser	Gly	Thr	Pro				
625					630					635					640				
Tyr	Ala	Asn	Thr	Leu	Thr	Tyr	Asp	Tyr	Glu	Leu	Asn	Asn	Leu	Gln	Asp				
			645					650						655					
Asp	Asn	Arg	Pro	Pro	Phe	Val	Ile	Thr	Thr	Thr	Asp	Val	Asn	Gly	Asn				
			660					665					670						
Gln	Leu	Arg	Asn	Glu	Phe	Asp	Gly	Ala	Gly	Arg	His	Val	Ser	Gln	Cys				
		675					680					685							
Leu	Lys	Asp	Ser	Asp	Gly	Asp	Gly	Lys	Phe	Tyr	Thr	Ile	His	Thr	Gln				
	690					695					700								
Gln	Tyr	Asp	Glu	Gln	Gly	Arg	His	His	Thr	Ser	Thr	Tyr	Ser	Asp	Tyr				
705					710					715					720				
Leu	Thr	Asn	Gly	Arg	Gln	Gln	Thr	Asp	Pro	Asp	Lys	Val	His	Leu	Ser				
			725					730						735					
Met	Ser	Lys	Ser	Tyr	Asp	Asn	Trp	Gly	Gln	Ile	Ala	Asn	Thr	His	Trp				
			740					745					750						
Ser	Tyr	Gly	Val	Ser	Glu	Lys	Ile	Thr	Val	Asp	Pro	Ile	Thr	Leu	Thr				
		755					760					765							
Ala	Thr	Lys	Gln	Leu	Gln	Ser	Asn	Ser	Asn	Asn	Val	Gln	Thr	Gly	Lys				
	770					775					780								
Glu	Val	Thr	Thr	Tyr	Thr	Pro	Ser	Gln	Gln	Pro	Ile	Gln	Ile	Thr	Leu				
785					790					795					800				
Phe	Asp	Glu	Ala	Gly	His	Leu	Gln	Ser	Cys	His	Thr	Leu	Thr	Arg	Asp				
			805					810						815					
Gly	Trp	Asp	Arg	Val	Arg	Lys	Glu	Thr	Asp	Ala	Ile	Gly	Gln	Cys	Thr				
			820					825					830						
Ile	Tyr	Gln	Tyr	Asp	Asn	Tyr	Asn	Arg	Val	Ile	Gln	Ile	Thr	Leu	Pro				
		835					840					845							
Asp	Gly	Thr	Ile	Val	Asn	Arg	Lys	Tyr	Ala	Pro	Phe	Ser	Thr	Asp	Thr				
	850					855					860								
Leu	Ile	Thr	Asp	Ile	Arg	Val	Asn	Gly	Ile	Ser	Leu	Gly	Gln	Gln	Thr				
865					870					875					880				
Phe	Asp	Gly	Leu	Ser	Arg	Leu	Thr	Gln	Ser	Gln	Asp	Gly	Gly	Arg	Val				
				885					890					895					
Trp	Ala	Tyr	Thr	Tyr	Ser	Ala	Gly	Asn	Asp	Gln	Cys	Pro	Ser	Thr	Val				
			900					905						910					
Ile	Thr	Pro	Asp	Gly	Gln	Phe	Ile	His	Tyr	Gln	Tyr	Gln	Pro	Glu	Leu				
		915					920					925							



1490                      1495                      1500  
 Arg Ile Lys Trp Gly Val Thr Arg Ser Leu Asp Arg Glu Ile Val Arg  
 1505                      1510                      1515                      1520  
 Asn Glu Glu Gly Gln Val Ile Lys Asp His Ser Arg Gly Tyr Thr Asp  
                          1525                      1530                      1535  
 Asn Phe Met Gly Lys Gly Glu Gln Ala Ile Leu Val His Gly Asp Lys  
                          1540                      1545                      1550  
 Asp Gly Phe Leu Tyr His Thr Glu Gly Asn Lys His Asn Gly Lys Gly  
                          1555                      1560                      1565  
 Pro Tyr Thr Arg His Thr Pro Glu Gln Leu Val Asp Tyr Leu Lys Asp  
                          1570                      1575                      1580  
 Asn Asn Ile Val Asp Leu Thr Gln Gly Gly Asp Lys Pro Val His Leu  
 1585                      1590                      1595                      1600  
 Leu Ser Cys Tyr Gly Lys Ser Ser Gly Ala Ala Asp Lys Met Ala Lys  
                          1605                      1610                      1615  
 Tyr Ile Asn Arg Pro Val Ile Ala Tyr Ser Asn Lys Pro Thr Ile Ser  
                          1620                      1625                      1630  
 Gln Gly Leu Ala Arg Ile Glu Arg Lys Asp Phe Phe Leu Lys Ser Thr  
                          1635                      1640                      1645  
 Tyr His Ser Tyr Asp Pro Arg Lys Ile Ile Leu Gly Arg Thr Glu Lys  
                          1650                      1655                      1660  
 Thr Val Lys Pro Lys Thr Phe Arg Pro  
 1665                      1670

&lt;210&gt; 24

&lt;211&gt; 105

&lt;212&gt; PRT

&lt;213&gt; Xenorhabdus bovienii

&lt;400&gt; 24

Leu Cys Tyr Gly His Ile Cys Leu Ser Gly Ile Pro His Arg His Ile  
 1                      5                      10                      15  
 Tyr Ile Gly Ser Thr Tyr Tyr Gly Asn Arg Lys Ser Thr Val Leu Tyr  
                          20                      25                      30  
 Ala Ala Ile Leu His Ser Val Ser Leu Phe Tyr Leu Leu Ile Ala Val  
                          35                      40                      45  
 Phe Ser Ala Ser Ser Ala Gly Tyr Leu Thr Tyr Gly Leu Ser Tyr His  
                          50                      55                      60  
 Thr Ile Ser Val Gln Phe Leu Gly Leu Ser His Gln Ile Pro Leu Leu  
 65                      70                      75                      80  
 Leu Ser Thr Tyr Asp Gln Ser Leu Asn Leu Leu Leu Asp Tyr Gln Tyr  
                          85                      90                      95  
 Gly Asp Ser Gly His Arg Asn Leu Glu  
                          100                      105

&lt;210&gt; 25

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Xenorhabdus bovienii

&lt;400&gt; 25

Ser Ala Gln Cys Ile Val Gly Lys Val Phe Arg Ile Ser Met Val Ile  
 1                      5                      10                      15  
 Ser Asp Ile Tyr Tyr Ser Thr Ser Leu Ile Ile Phe Gln Pro Asp Ile  
                          20                      25                      30  
 Ile Arg His Ile Trp Met Ser Val Val Tyr Leu Cys Gln Leu Ala Trp  
                          35                      40                      45

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Val Ser Trp Val Gly Lys Phe Glu Gly Ser Met Val Phe Cys Pro Ile  
 50 55 60  
 Cys Glu Cys Gly Val Thr Gly Gly Asp Ile Ala Ile Asp Ile Ile Ser  
 65 70 75 80  
 Lys Ile Leu Cys Asp Tyr Ala Met Ala Ile Phe Val Cys Arg Ala Phe  
 85 90 95  
 Arg Thr Val Thr Phe Ile Leu Val Gln Pro Ile Thr Gly Ile Val Arg  
 100 105 110  
 Val Leu Phe Cys Thr Leu Gln Tyr Ser Ile Gln Phe His Tyr Ser Ile  
 115 120 125  
 Cys

<210> 26  
 <211> 141  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 26  
 Pro Ser Ser Leu Arg Thr Ile Ser Leu Ser Lys Leu Leu Val Thr Pro  
 1 5 10 15  
 His Phe Ile Leu Glu Leu Ser Glu Val Asp Leu Ser Lys Ala Phe Ser  
 20 25 30  
 Pro Ser Ser Ala Asn Ala Pro Arg Cys Val Ala Ser Leu Val Pro Pro  
 35 40 45  
 Leu Met Ala Asp Ser Ala Asn Pro Ala Ala Pro Ile Pro Ile Glu Thr  
 50 55 60  
 His Pro Ser Ile Glu Asp Ala Phe Gly Glu Ala Ser Ser Ser Ala Pro  
 65 70 75 80  
 Leu Thr Ile Asp Val Ile Ser Asp Val Thr Leu Ser Ala Pro Asn Ala  
 85 90 95  
 Ser Ala Val Val Glu Val Glu Ala Ile Ala Ala Ala Ile Pro Pro Ala  
 100 105 110  
 Ala Ala Ile Ala Ile Pro Pro Val Ala Met Val Ser Ser Asn Pro Ala  
 115 120 125  
 Ile Pro Met Pro Ile Pro Val His Ala Cys Gln Leu Lys  
 130 135 140

<210> 27  
 <211> 101  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 27  
 Ala His Cys His Ile Ala Leu Phe Pro Cys Trp His Asn Pro Gln Tyr  
 1 5 10 15  
 Cys Gln Gln His Pro Asp His His Ser Asn Cys His His Gln Phe Lys  
 20 25 30  
 Gln Glu Tyr Pro Pro Ser Arg Gln Arg Arg Glu Asn Ile Thr Leu Thr  
 35 40 45  
 Gln Leu Pro Ile Lys His Thr Gly Ile Glu Ala Gly Ser Gln Thr Asn  
 50 55 60  
 Arg Lys Arg Gln Thr Cys Met Phe Gln Arg Ala Asn Glu Ser Lys Val  
 65 70 75 80  
 His Gln Leu Gly Gln Asn Gln Gly Arg Asp Arg Asn Phe Tyr Trp Cys  
 85 90 95  
 Phe Asp Ile Leu Thr

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<210> 28  
 <211> 117  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 28  
 Pro Gln Ser Thr Pro Ser Ser Gln Asn Ser Arg Gln Leu Thr Pro Ala  
 1 5 10 15  
 Glu Ser Ser Gln His Gln Lys Gln Lys Ser Asp His Ile Glu Ile Met  
 20 25 30  
 Ile Pro Ser Glu Ala Pro Arg Glu Tyr Arg Glu Gln Leu His Lys Ala  
 35 40 45  
 Thr Pro Ala Arg Asn Arg Asp Val Ala Pro Asn Pro Ser Val Phe Asp  
 50 55 60  
 Ile Leu Arg Asp Tyr His Trp Lys Asn Phe Ser Pro Val Lys Ala Ala  
 65 70 75 80  
 Lys Ser Ser Leu Thr Pro His Pro Val His Gln Lys Ala Ile Pro Leu  
 85 90 95  
 Asn Asp Gln Arg Asn Thr Ser Met Lys Gln Ser Leu Lys Pro Glu Met  
 100 105 110  
 Arg Gln Lys Leu Tyr  
 115

<210> 29  
 <211> 124  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 29  
 Gly Lys Asn Cys Ile Asn Asp Gln Gly Asn Leu Pro Asp Arg Tyr Thr  
 1 5 10 15  
 Gln Asn Cys Arg Pro His Leu Thr Asp Asn Pro Pro Tyr Gly Thr Val  
 20 25 30  
 Thr Glu Arg Asn Pro Arg Gln Tyr Gln His Ala Asp Leu Phe Gln Met  
 35 40 45  
 Arg Lys Leu Ile Gly Gln Leu Gln Asn Pro Ser Gly Asn Asn Gly Pro  
 50 55 60  
 Thr Gln Arg Gln His Trp Arg Ile Ala Ile Arg Ser His Lys Gln Cys  
 65 70 75 80  
 Lys Asn Asp His Thr Asp Ile Glu Gln Cys Arg Ser Lys Ser Arg His  
 85 90 95  
 Arg Lys Ala Val Pro Cys Ile Lys Asn Cys Ala Ser Gln Arg Ser Gln  
 100 105 110  
 Arg Asn Gln Lys Asp Ile Arg Lys Arg Asn Ser Lys  
 115 120

<210> 30  
 <211> 515  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 30  
 Asn Asn Thr Met Asn Leu Leu Lys Ser Leu Ala Ala Val Ser Ser Met  
 1 5 10 15  
 Thr Met Phe Ser Arg Val Leu Gly Phe Ile Arg Asp Ala Ile Ile Ala

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			20					25					30		
Arg	Ile	Phe	Gly	Ala	Gly	Met	Ala	Thr	Asp	Ala	Phe	Phe	Val	Ala	Phe
		35					40					45			
Lys	Leu	Pro	Asn	Leu	Leu	Arg	Arg	Ile	Phe	Ala	Glu	Gly	Ala	Phe	Ser
	50					55					60				
Gln	Ala	Phe	Val	Pro	Ile	Leu	Ala	Glu	Tyr	Lys	Asn	Gln	Gln	Gly	Asp
65					70					75					80
Glu	Ala	Thr	Arg	Thr	Phe	Ile	Ala	Tyr	Ile	Ser	Gly	Met	Leu	Thr	Leu
				85					90					95	
Ile	Leu	Ala	Ile	Val	Ser	Val	Ile	Gly	Val	Ile	Ala	Ala	Pro	Trp	Ile
			100					105					110		
Ile	Tyr	Val	Thr	Ala	Pro	Gly	Phe	Thr	Asp	Thr	Pro	Asp	Lys	Phe	Val
		115					120					125			
Leu	Thr	Arg	Asp	Leu	Leu	Arg	Ile	Thr	Phe	Pro	Tyr	Ile	Phe	Leu	Ile
	130					135					140				
Ser	Leu	Ala	Ser	Leu	Ala	Gly	Ala	Ile	Leu	Asn	Thr	Trp	Asn	Arg	Phe
145					150					155					160
Ser	Val	Pro	Ala	Phe	Ala	Pro	Thr	Leu	Leu	Asn	Val	Ser	Met	Ile	Ile
				165					170					175	
Phe	Ala	Leu	Phe	Val	Ala	Pro	Tyr	Cys	Asn	Pro	Pro	Val	Leu	Ala	Leu
			180					185					190		
Gly	Trp	Ala	Val	Val	Ala	Gly	Gly	Val	Leu	Gln	Leu	Ala	Tyr	Gln	Leu
		195					200					205			
Pro	His	Leu	Lys	Lys	Ile	Gly	Met	Leu	Val	Leu	Pro	Arg	Ile	Ser	Phe
	210					215					220				
Arg	Asp	Ser	Ala	Val	Trp	Arg	Val	Ile	Arg	Gln	Met	Gly	Pro	Ala	Ile
225					230					235					240
Leu	Gly	Val	Ser	Val	Gly	Gln	Ile	Ser	Leu	Ile	Ile	Asn	Thr	Ile	Phe
				245					250					255	
Ala	Ser	Phe	Leu	Val	Ser	Gly	Ser	Val	Ser	Trp	Met	Tyr	Tyr	Ala	Asp
			260					265					270		
Arg	Leu	Met	Glu	Leu	Pro	Ser	Gly	Val	Leu	Gly	Val	Ala	Leu	Gly	Thr
		275					280					285			
Ile	Leu	Leu	Pro	Ser	Leu	Ala	Lys	Ser	Phe	Ser	Ser	Gly	Asn	His	Glu
	290					295					300				
Glu	Tyr	Arg	Lys	Leu	Met	Asp	Trp	Gly	Leu	Arg	Leu	Cys	Phe	Leu	Leu
305					310					315					320
Ala	Leu	Pro	Cys	Ala	Val	Ala	Leu	Gly	Ile	Leu	Ala	Glu	Pro	Leu	Thr
				325					330					335	
Val	Ser	Leu	Phe	Gln	Tyr	Gly	His	Phe	Ser	Ala	Phe	Asp	Ala	Glu	Met
			340					345					350		
Thr	Gln	Arg	Ala	Leu	Ile	Ala	Tyr	Cys	Phe	Gly	Leu	Met	Gly	Leu	Ile
		355					360					365			
Val	Val	Lys	Val	Leu	Ala	Pro	Gly	Phe	Tyr	Ser	Arg	Gln	Asp	Ile	Lys
	370														

Leu Leu Arg Leu Met Gly Val Val Ile Ala Gly Ala Gly Ser Tyr Phe  
                   485                  490                  495  
 Ala Val Leu Ala Leu Met Gly Phe Arg Leu Lys Asp Phe Ala His Arg  
                   500                  505                  510  
 Gly Leu Gln  
           515

<210> 31  
 <211> 216  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 31  
 Ala Ile Ile Leu Ile Arg Asp Lys Leu Ser Arg Ile Phe Ser Arg Gln  
   1                  5                  10                  15  
 Ile Ser Gly Glu Gly Met Phe Gly Tyr Arg Ser Ala Ser Pro Lys Ile  
           20                  25                  30  
 Arg Phe Ile Thr Asp Arg Met Val Val Arg Leu Val Tyr Glu Arg Asp  
           35                  40                  45  
 Ala Tyr Arg Leu Ala Glu Tyr Tyr Ser Glu Asn Lys Asp Phe Leu Lys  
   50                  55                  60  
 Pro Trp Glu Pro Thr Arg Asp Gly Ser Phe Tyr Gln Pro Ser Gly Trp  
 65                  70                  75                  80  
 Thr Asn Arg Leu Asn Tyr Ile Ala Glu Leu Gln Arg Gln Asn Ala Thr  
           85                  90                  95  
 Phe Asn Phe Val Leu Leu Asp Ser Asp Glu Arg Glu Ile Met Gly Val  
           100                  105                  110  
 Ala Asn Phe Thr Asn Val Val Arg Gly Ala Phe His Ser Cys Tyr Leu  
           115                  120                  125  
 Gly Tyr Ser Leu Ala Glu Lys Leu Gln Gly Gln Gly Leu Met Tyr Glu  
   130                  135                  140  
 Ala Leu Gln Pro Ala Ile Arg Tyr Met Gln Arg Tyr Gln Arg Met His  
 145                  150                  155                  160  
 Arg Ile Met Ala Asn Tyr Met Pro His Asn His Arg Ser Gly Asn Leu  
           165                  170                  175  
 Leu Lys Lys Leu Gly Phe Glu Gln Glu Gly Tyr Ala Lys Asn Tyr Leu  
           180                  185                  190  
 Met Ile Asp Gly Val Trp Gln Asp His Val Leu Thr Ala Leu Thr Asp  
           195                  200                  205  
 Asp Ala Trp Gly Lys Val Gly Leu  
   210                  215

<210> 32  
 <211> 404  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 32  
 Trp Cys Ala Met Ser Leu Val Ser Gln Ala Arg Ser Leu Gly Lys Tyr  
   1                  5                  10                  15  
 Phe Leu Leu Phe Asp Asn Leu Leu Val Val Leu Gly Phe Phe Val Val  
           20                  25                  30  
 Phe Pro Leu Ile Ser Ile Arg Phe Val Glu Gln Leu Gly Trp Ala Ala  
           35                  40                  45  
 Leu Ile Val Gly Phe Ala Leu Gly Leu Arg Gln Leu Val Gln Gln Gly  
   50                  55                  60  
 Leu Gly Ile Phe Gly Gly Ala Ile Ala Asp Arg Phe Gly Ala Lys Pro

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65 70 75 80  
 Met Ile Val Thr Gly Met Leu Leu Arg Ala Leu Gly Phe Ala Leu Met  
 85 90 95  
 Ala Met Ala His Glu Pro Trp Ile Leu Leu Ser Cys Val Leu Ser  
 100 105 110  
 Gly Leu Gly Gly Thr Leu Phe Asp Pro Pro Arg Ala Ala Leu Val Ile  
 115 120 125  
 Lys Leu Thr Arg Pro His Glu Arg Gly Arg Phe Tyr Ser Ile Leu Met  
 130 135 140  
 Met Gln Asp Ser Ala Gly Ala Val Val Gly Ala Leu Ile Gly Ser Trp  
 145 150 155 160  
 Leu Leu Gln Tyr Asp Phe Asn Ile Val Cys Trp Ile Gly Ala Ser Ile  
 165 170 175  
 Phe Val Leu Ala Ala Leu Phe Asn Ala Trp Leu Leu Pro Ala Tyr Arg  
 180 185 190  
 Ile Ser Thr Ile Arg Thr Pro Ile Lys Glu Gly Met Met Arg Val Ile  
 195 200 205  
 Arg Asp Arg Arg Phe Leu Tyr Tyr Val Leu Thr Leu Thr Gly Tyr Phe  
 210 215 220  
 Val Leu Ser Val Gln Val Met Leu Met Phe Pro Ile Ile Ile His Glu  
 225 230 235 240  
 Ile Thr Gly Thr Pro Thr Ala Val Lys Trp Met Tyr Ala Ile Glu Thr  
 245 250 255  
 Ala Ile Ser Leu Thr Leu Leu Tyr Pro Ile Ala Arg Trp Ser Glu Lys  
 260 265 270  
 His Phe Arg Leu Glu Gln Arg Leu Met Ala Gly Leu Phe Leu Met Ser  
 275 280 285  
 Ile Cys Met Phe Pro Ile Gly Trp Val Asn Gln Leu His Thr Leu Phe  
 290 295 300  
 Gly Leu Leu Cys Leu Phe Tyr Leu Gly Leu Val Thr Ala Asp Pro Ala  
 305 310 315 320  
 Arg Glu Thr Leu Ser Ala Ser Leu Ser Asp Pro Arg Ala Arg Gly Ser  
 325 330 335  
 Tyr Met Gly Phe Ser Arg Leu Gly Leu Ala Leu Gly Gly Ala Ile Gly  
 340 345 350  
 Tyr Thr Gly Gly Gly Trp Leu Tyr Asp Thr Gly Arg Asp Leu Asn Met  
 355 360 365  
 Pro Gln Leu Pro Trp Ile Leu Leu Gly Leu Ser Gly Leu Ile Thr Ile  
 370 375 380  
 Tyr Ala Leu His Arg Gln Phe Asn Gln Lys Lys Ile Asp Pro Val Met  
 385 390 395 400  
 Leu Gly Arg His

<210> 33.

<211> 191

<212> PRT

<213> Xenorhabdus bovienii

<400> 33

Lys Gly Ala Asn Met Lys Arg Phe Phe Leu Gly Ala Ala Leu Val Leu  
 1 5 10 15  
 Val Gly Leu Val Ser Gly Cys Asp Gln Phe Lys Asp Phe Ser Ile Asn  
 20 25 30  
 Glu Gly Leu Met Asn Asp Tyr Leu Leu Lys Lys Val His Tyr Gln Lys  
 35 40 45  
 Lys Ile Ser Ile Pro Gly Ile Ala Asn Ala Asn Ile Thr Leu Gly Asp

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50		55		60
Leu Ser Ser Gln Ile Gly Arg Gln Asp Pro Glu Lys Ile Glu Leu Ser				
65		70		75
Thr Gln Ala Lys Val Gln Leu Ala Thr Leu Leu Gly Thr Ile Gln Ala				80
		85		90
Asp Met Lys Leu Thr Ile Lys Ala Lys Pro Val Phe Asp Ala Glu Lys				95
		100		105
Gly Ala Ile Phe Val Lys Gly Leu Glu Ile Val Asp Tyr Gln Thr Thr				110
		115		120
Pro Glu Lys Ala Ala Ala Pro Val Lys Ala Leu Ile Pro Tyr Leu Asn				125
		130		135
Thr Ser Leu Ser Glu Phe Phe Asp Thr His Pro Val Tyr Val Leu Asn				140
		145		150
Pro Glu Lys Ser Lys Ala Glu Ala Ala Ala Ser Gln Phe Ala Lys Arg				155
		165		170
Leu Glu Ile Lys Pro Gly Lys Leu Val Ile Gly Leu Thr Asp Lys				175
		180		185
				190

<210> 34  
 <211> 205  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 34
Gln Val Ala Leu Gln His Gly Arg Arg Leu Gly Thr Ile Thr Leu Phe
1 5 10 15
Asp Asn Leu Leu Gly Leu Asn Gln Val Met Asn Glu Phe Ser Ile Val
20 25 30
Cys Arg Ile Leu Gly Thr Leu Phe Asn Arg Ala Pro Gln Asp Pro Val
35 40 45
Leu Gln Pro Leu Ile Thr Met Ile Ala Glu Gly Lys Leu Lys Gln Ala
50 55 60
Trp Pro Leu Glu Gln Asp Glu Trp Leu Asp Arg Leu Gln Gln Asn Ser
65 70 75 80
Glu Leu Ser Val Met Ala Ala Asp Tyr His Ala Leu Phe Thr Gly Glu
85 90 95
Ser Ala Ser Val Ala Val Cys Arg Ser Asp Tyr Thr Asp Gly Glu Glu
100 105 110
Ser Glu Val Arg Gln Phe Leu Thr Glu Arg Gly Met Pro Leu Ser Asp
115 120 125
Thr Pro Ala Asp Gln Phe Gly Ser Leu Leu Leu Ala Val Ser Trp Leu
130 135 140
Glu Asp Gln Ala Ala Glu Asp Glu Ile Gln Ala Gln Ile Thr Leu Phe
145 150 155 160
Asp Glu Tyr Leu Leu Pro Trp Cys Gly Gln Phe Leu Gly Lys Val Glu
165 170 175
Ala His Ala Thr Ser Gly Phe Tyr Arg Thr Leu Ala Ile Val Thr Arg
180 185 190
Glu Ala Leu Gln Ala Leu Arg Asp Glu Leu Glu Ser Glu
195 200 205

<210> 35  
 <211> 315  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 35

Asp Cys Met Asn Ile Ile Phe Phe His Pro Ser Phe Asn Thr Asp Glu  
 1 5 10 15  
 Trp Ile Gln Gly Ile Gln Ala Arg Leu Pro Asp Ala Lys Val Arg Gln  
 20 25 30  
 Trp Val Ser Gly Asp Gln Glu Pro Ala Asp Tyr Ala Leu Val Trp Gln  
 35 40 45  
 Pro Pro Tyr Glu Met Leu Ala Asn Arg Gln Gly Leu Lys Gly Ile Phe  
 50 55 60  
 Ala Leu Gly Ala Gly Val Asp Ala Ile Phe Lys Gln Glu Ser Lys Asn  
 65 70 75 80  
 Pro Gly Thr Leu Leu Ala Asp Val Pro Leu Ile Arg Leu Glu Asp Thr  
 85 90 95  
 Gly Met Gly Arg Gln Met Gln Glu Tyr Ala Ile Thr Ser Val Leu His  
 100 105 110  
 Tyr Phe Arg Arg Met Asp Glu Tyr Lys Arg Tyr Gln Glu Gln Arg Leu  
 115 120 125  
 Trp Asn Pro Ile Ala Pro His Asn Arg Lys Glu Phe Val Ile Gly Val  
 130 135 140  
 Leu Gly Ala Gly Ile Leu Gly Arg Ser Val Ile Gly Lys Leu Met Glu  
 145 150 155 160  
 Phe Asp Phe Asn Val Arg Cys Trp Ser Arg Thr Ser Lys Gln Leu Asp  
 165 170 175  
 Ser Val Glu Ser Phe Tyr Gly Lys Glu Gln Leu Gly Asp Phe Leu Ser  
 180 185 190  
 Gly Cys Lys Val Leu Ile Asn Leu Leu Pro Asp Thr Pro Asp Thr Arg  
 195 200 205  
 Gly Ile Leu Asn Leu Ser Leu Phe Ser Gln Leu Lys Ser Gly Ser Tyr  
 210 215 220  
 Val Ile Asn Leu Ala Arg Gly Ala Gln Leu Val Glu Gln Asp Leu Leu  
 225 230 235 240  
 Val Ala Ile Asp Lys Gly Tyr Ile Ala Gly Ala Thr Leu Asp Val Phe  
 245 250 255  
 Ala Glu Glu Pro Leu Ser Asn Met His Pro Phe Trp Thr His Pro Arg  
 260 265 270  
 Ile Asn Val Thr Pro His Ile Ala Ala Asn Thr Ile Pro Glu Ala Ala  
 275 280 285  
 Met Asp Val Ile Cys Glu Asn Ile Arg Arg Met Val Gln Gly Glu Met  
 290 295 300  
 Pro Thr Gly Leu Val Asp Arg Val Arg Gly Tyr  
 305 310 315

&lt;210&gt; 36

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Xenorhabdus bovienii

&lt;400&gt; 36

Lys Thr Ser Gln Gly Phe Thr Ser Thr Thr Cys Ser Asn Gly Asn Val  
 1 5 10 15  
 Leu Lys Ile Cys Gly Leu Ile Thr Pro Cys Ser Ser Leu Ile Gln Arg  
 20 25 30  
 Thr Tyr Pro Asn Asn Met Thr Ile Gly Ile Phe Ser Lys Glu Ser Thr  
 35 40 45  
 Ala Lys Asn Phe Gly Met Gly Phe Leu Tyr Tyr Phe Asp Leu Arg Val  
 50 55 60  
 Leu Ser Pro Phe Phe Lys Ala Pro Ile Asn Ile Phe Thr Gly Trp Gln  
 65 70 75 80

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His Asn Thr Asn Phe Arg Lys Ser Arg Asn Ser Thr Ile Arg Leu Cys  
                   85                  90                  95  
 Ser Ser Thr Pro Asn Ser Lys Gln Tyr Phe Thr Thr Ser Arg Lys Cys  
                   100                  105                  110  
 His Ile Thr Gly Ala Gly Lys Tyr Arg Phe Ser Ile Glu Asn Cys Phe  
                   115                  120                  125  
 Ile Lys Ser Gly  
                   130

<210> 37  
 <211> 289  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 37  
 Tyr Ser Ala Gly Cys Ser Thr Val Leu Lys Ser Ser Leu Asn Leu Gln  
   1                  5                  10                  15  
 Cys Asp Thr Phe Asn Cys Glu Ser Phe Val Met Leu Thr Leu Asn Phe  
                   20                  25                  30  
 Ser Thr Ser Val Asn Ala Lys Pro Ser His Ile Trp Ala His Tyr Val  
                   35                  40                  45  
 Asp Phe Asp Leu Arg Lys Lys Trp Glu Val Asp Leu Glu Tyr Phe Gln  
                   50                  55                  60  
 Phe Glu Gly Glu Val Lys Thr Gly Gln Tyr Gly Arg Met Ile Leu Ser  
   65                  70                  75                  80  
 Gly Met Pro Glu Ile Arg Phe Tyr Leu Ser Asn Ile Glu Val Asn Lys  
                   85                  90                  95  
 Glu Phe Thr Asp Gln Val Asn Leu Pro Gln Met Gly Ile Leu Thr Phe  
                   100                  105                  110  
 Arg His Gln Ile Ile Thr Asp Glu Asn Asn Met Ala Cys Arg Val Gln  
                   115                  120                  125  
 Val Thr Val Ser Phe Glu Pro Asp Ala Asn Ile Pro Ala Val Gln Ala  
                   130                  135                  140  
 Glu Ser Phe Phe Lys Gln Gly Thr Gln Asp Leu Val Glu Ser Val Leu  
   145                  150                  155                  160  
 Arg Leu Lys Ser Val Val Glu Thr Val Ser Pro Lys Pro Asn Leu Gln  
                   165                  170                  175  
 Leu Val Tyr Val Ser Asp Ile Glu Ser Ser Thr Ala Phe Tyr Lys Thr  
                   180                  185                  190  
 Ile Phe Asn Ala Glu Pro Ile Phe Ala Ser Ser Arg Tyr Val Ala Phe  
                   195                  200                  205  
 Pro Ala Gly Gly Glu Val Leu Phe Ala Ile Trp Ser Gly Gly Ala Lys  
                   210                  215                  220  
 Pro Asp Arg Ala Ile Pro Arg Phe Ser Glu Ile Gly Ile Met Leu Pro  
   225                  230                  235                  240  
 Ser Gly Lys Asp Val Asp Arg Cys Phe Glu Glu Trp Arg Lys Asn Pro  
                   245                  250                  255  
 Glu Ile Lys Ile Val Gln Glu Pro His Thr Glu Val Phe Gly Arg Thr  
                   260                  265                  270  
 Phe Leu Ala Glu Asp Pro Asp Gly His Ile Ile Arg Val Cys Pro Leu  
                   275                  280                  285  
 Asp

<210> 38  
 <211> 270  
 <212> PRT

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<213> Xenorhabdus bovienii

<400> 38

Lys Gly Asn Gln Ile Thr Met Ile Leu Tyr Lys Gly Ser Lys Asn Tyr  
 1 5 10 15  
 Leu Phe Asn Gln Leu Asn Tyr Asp Ser Cys Val Leu Leu Glu Val Asp  
 20 25 30  
 Glu Ser Val Asn Leu Asn Gly Trp Asp Glu Leu Ser Arg Ala Gln Arg  
 35 40 45  
 Leu Leu Phe Leu Met Glu Ile Leu Arg Arg Tyr His Phe Pro Val Gln  
 50 55 60  
 Gly Lys Val Leu Ala Gln Lys Leu Asn Ile Ser Leu Arg Thr Leu Tyr  
 65 70 75 80  
 Arg Asp Ile Ala Ser Leu Gln Ala Gln Gly Ala Ile Ile Glu Gly Glu  
 85 90 95  
 Pro Gly Ile Gly Tyr Val Leu Arg Pro Gly Phe Val Leu Pro Pro Leu  
 100 105 110  
 Met Phe Thr Gln Asn Glu Ile Glu Ala Leu Ala Leu Gly Ala Asn Trp  
 115 120 125  
 Val Ala Lys Arg Ala Asp Pro Gln Leu Lys Glu Ser Ala Asn Asn Ala  
 130 135 140  
 Ile Ser Lys Ile Ala Ala Val Ile Pro Ala Glu Leu Lys Gln Met Leu  
 145 150 155 160  
 Glu Ala Ser Ser Leu Leu Ile Gly Pro Ala Ala Thr Ala Val Gln Pro  
 165 170 175  
 Val Val Glu Ile Gln Gln Ile Arg Gln Ala Ile Asn Thr Arg His Lys  
 180 185 190  
 Ile Thr Leu Ala Tyr Leu Asp Ile Lys Asp Ile Pro Ser Glu Arg Thr  
 195 200 205  
 Ile Trp Pro Phe Ala Leu Gly Tyr Phe Glu Asn Ile Ser Ile Val Ile  
 210 215 220  
 Gly Trp Cys Glu Leu Arg Glu Glu Phe Arg His Phe Arg Ser Asp Arg  
 225 230 235 240  
 Ile Met Arg Leu Lys Ile Glu Asn Gln Cys Tyr Pro Arg Ser Arg Gln  
 245 250 255  
 Val Leu Leu Lys Glu Trp Arg Ala Met Glu Lys Ile Ser Arg  
 260 265 270

<210> 39

<211> 209

<212> PRT

<213> Xenorhabdus bovienii

<400> 39

Arg Lys Met Thr Ile Tyr Asp Leu Lys Pro Arg Phe Gln Asn Leu Leu  
 1 5 10 15  
 Arg Pro Ile Val Ile Tyr Leu Tyr Lys Gln Gly Ile Thr Ala Asn Gln  
 20 25 30  
 Val Thr Leu Thr Ala Leu Phe Leu Ser Ile Phe Ala Gly Ser Leu Leu  
 35 40 45  
 Ser Leu Phe Pro Ser Pro His Leu Tyr Trp Leu Leu Pro Val Phe Leu  
 50 55 60  
 Phe Ile Arg Met Ala Leu Asn Ala Ile Asp Gly Met Leu Ala Arg Glu  
 65 70 75 80  
 His Asn Gln Lys Ser His Leu Gly Ala Ile Tyr Asn Glu Leu Gly Asp  
 85 90 95  
 Val Ile Ser Asp Val Ala Leu Tyr Leu Pro Phe Cys Leu Leu Pro Asp

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100 105 110  
 Val Asn Ser Leu Ser Leu Leu Ile Ile Leu Phe Leu Thr Ile Leu Thr  
 115 120 125  
 Glu Phe Ile Gly Val Leu Ala Gln Thr Ile Gly Ala Ser Arg Arg Tyr  
 130 135 140  
 Asp Gly Pro Ile Gly Lys Ser Asp Arg Ala Phe Ile Phe Gly Ala Tyr  
 145 150 155 160  
 Gly Leu Ile Ile Ala Ile Phe Pro Leu Ala Leu Gly Trp Ser Ile Ser  
 165 170 175  
 Leu Phe Ala Phe Met Ile Ile Leu Leu Val Thr Cys Tyr Gln Arg  
 180 185 190  
 Val Val Lys Ala Leu Arg Glu Ile Arg Leu Ala Glu Gln Ser His Ser  
 195 200 205  
 Lys

<210> 40  
 <211> 592  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 40  
 Gly Val Asn Met Thr Pro Gln Leu Asp Gln Arg Ile Ala Glu Glu His  
 1 5 10 15  
 Tyr Phe Thr Thr Ser Asp Asn Ala Ser Leu Phe Tyr Arg Tyr Trp Pro  
 20 25 30  
 Gln Gln Gln Ala Asn Pro Asp Arg Ala Ile Ile Ile Phe His Arg Gly  
 35 40 45  
 His Glu His Ser Gly Arg Ile Gln His Val Val Asp Gly Leu Asp Leu  
 50 55 60  
 Pro Asp Val Pro Met Phe Ala Trp Asp Ala Arg Gly His Gly Lys Thr  
 65 70 75 80  
 Glu Gly Pro Arg Gly Tyr Ser Pro Ser Met Gly Thr Ser Ile Arg Asp  
 85 90 95  
 Val Asp Glu Phe Val Arg Phe Ile Ala Thr Gln Tyr Gly Ile Ala Met  
 100 105 110  
 Glu Asn Ile Val Val Ile Gly Gln Ser Val Gly Ala Val Leu Val Ser  
 115 120 125  
 Ala Trp Val His Asp Tyr Ala Pro Lys Ile Arg Ala Met Ile Leu Ala  
 130 135 140  
 Ala Pro Ala Phe Asp Ile Lys Leu Tyr Ile Pro Phe Ala Thr Gln Gly  
 145 150 155 160  
 Leu Gln Leu Met Gln Lys Ala Arg Gly Ile Phe Phe Val Asn Ser Tyr  
 165 170 175  
 Val Lys Ala Arg Tyr Leu Thr His Asp Glu Thr Arg Ile Ala Ser Tyr  
 180 185 190  
 Asn Ser Asp Pro Leu Ile Thr Arg Glu Ile Ala Val Asn Ile Leu Leu  
 195 200 205  
 Asp Leu Tyr Gln Thr Ala Glu Arg Val Val Lys Asp Ala Ala Ile  
 210 215 220  
 Thr Leu Pro Thr Leu Leu Phe Ile Ser Gly Ser Asp Tyr Val Val Asn  
 225 230 235 240  
 Lys Lys Pro Gln His Gln Phe Tyr Gln Gln Leu Asn Thr Pro Ile Lys  
 245 250 255  
 Glu Lys His Val Met Asp Gly Phe Tyr His Asp Thr Leu Gly Glu Lys  
 260 265 270  
 Asp Arg His Leu Val Phe Asp Lys Ile Arg Val Phe Ile Glu Arg Ile

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	275		280		285										
Phe	Ala	Leu	Pro	Arg	Tyr	Gln	His	Asp	Tyr	Ser	Gln	Glu	Asp	Thr	Trp
	290					295					300				
Ser	His	Ser	Ala	Asp	Glu	Phe	Arg	Thr	Leu	Ser	Thr	Ser	Leu	Pro	Cys
305				310						315					320
Leu	Cys	Pro	Lys	Lys	Leu	Ser	Tyr	Gln	Leu	Met	Arg	Lys	Val	Met	Ser
			325						330					335	
Thr	His	Trp	Gly	Arg	Thr	Ser	Glu	Gly	Val	Cys	Ile	Gly	Leu	Lys	Thr
			340					345					350		
Gly	Phe	Asp	Ser	Gly	Ser	Thr	Leu	Asp	Tyr	Val	Tyr	Arg	Asn	Gln	Pro
	355						360					365			
Gln	Gly	Lys	Gly	Ile	Leu	Gly	Arg	Ile	Leu	Asp	Lys	His	Tyr	Leu	Asn
370						375					380				
Ser	Ile	Gly	Trp	Arg	Gly	Ile	Arg	Gln	Arg	Lys	Ile	His	Ile	Glu	Met
385					390					395					400
Leu	Ile	Arg	His	Ala	Ile	Arg	Ser	Leu	Arg	Glu	Gln	Asn	Met	Pro	Val
			405					410						415	
His	Met	Val	Asp	Ile	Ala	Ala	Gly	His	Gly	Arg	Tyr	Ile	Leu	Asp	Ala
			420					425					430		
Ile	Asn	Asp	Phe	Ser	Lys	Val	Asp	Ser	Ile	Leu	Leu	Arg	Asp	Tyr	Ser
	435						440					445			
Glu	Ile	Asn	Val	Asn	Gln	Gly	Gln	Ala	Tyr	Ile	Glu	Glu	Arg	Asp	Leu
450						455					460				
Thr	Asp	Lys	Ile	Arg	Phe	Ile	Ile	Gly	Asp	Ala	Phe	Asn	Ala	Glu	Ser
465					470					475					480
Ile	Ser	Ser	Ile	Thr	Pro	Ala	Pro	Thr	Leu	Gly	Ile	Val	Ser	Gly	Leu
			485					490						495	
Tyr	Glu	Leu	Phe	Pro	Asp	Asn	Asn	Leu	Leu	Arg	Asn	Ser	Leu	Arg	Gly
	500							505					510		
Phe	Ala	Asp	Val	Met	Thr	Glu	Asn	Gly	Tyr	Leu	Val	Tyr	Thr	Gly	Gln
	515						520					525			
Pro	Trp	His	Pro	Gln	Ile	Glu	Val	Ile	Ala	Arg	Val	Leu	Ser	Ser	His
	530					535					540				
Arg	Asp	Ser	Gln	Pro	Trp	Ile	Met	Arg	Arg	Arg	Thr	Gln	Gly	Glu	Met
545					550					555					560
Asp	Ala	Leu	Val	Glu	Ala	Ala	Gly	Phe	Glu	Lys	Leu	Tyr	Gln	Leu	Thr
			565					570					575		
Asp	Asn	Trp	Gly	Ile	Phe	Thr	Val	Ser	Ile	Ala	Lys	Arg	Val	His	Arg
			580					585					590		

&lt;210&gt; 41

&lt;211&gt; 121

&lt;212&gt; PRT

&lt;213&gt; Xenorhabdus bovienii

&lt;400&gt; 41

His	His	Asn	Ser	Ile	Asn	Val	Leu	Leu	Lys	Asn	Ile	Ile	Ser	Pro	His
1				5					10					15	
Gln	Ile	Met	Leu	Leu	Cys	Phe	Thr	Val	Thr	Gly	His	Asn	Asn	Arg	Pro
			20					25					30		
Ile	Gln	Thr	Glu	Arg	Ser	Leu	Phe	Phe	Thr	Val	Val	Met	Ser	Thr	Gln
	35						40					45			
Asp	Val	Ser	Ser	Met	Ser	Leu	Thr	Asp	Ser	Ile	Cys	Leu	Met	Phe	Leu
	50					55					60				
Cys	Ser	Arg	Gly	Met	Pro	Val	Asp	Thr	Val	Arg	Gln	Lys	Gly	Arg	Ala
65					70					75					80
Val	Thr	Ala	His	Pro	Trp	Glu	Arg	Arg	Phe	Val	Met	Leu	Met	Asn	Leu

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				85					90					95			
Ser	Asp	Leu	Leu	Pro	Leu	Ser	Thr	Ala	Ser	Pro	Trp	Lys	Ile	Ser	Trp		
			100					105					110				
Leu	Ser	Ala	Arg	Val	Ser	Glu	Arg	Tyr									
		115					120										

<210> 42  
 <211> 444  
 <212> PRT  
 <213> Xenorhabdus bovienii

<400> 42

Ile	Asn	Lys	Tyr	Lys	Met	Glu	His	His	Met	His	Ser	Ser	Leu	Asp	Ser		
1				5					10					15			
Arg	Arg	Arg	Leu	Trp	Leu	Thr	Gly	Val	Ile	Trp	Leu	Leu	Phe	Leu	Ala		
			20					25					30				
Pro	Phe	Phe	Phe	Leu	Thr	Tyr	Gly	Gln	Val	Asn	Gln	Phe	Thr	Ala	Gln		
		35					40					45					
Arg	Ser	Asp	Val	Gly	Thr	Val	Met	Phe	Gly	Trp	Glu	His	Asn	Ile	Pro		
	50					55					60						
Phe	Trp	Ser	Trp	Ser	Ile	Ile	Pro	Tyr	Trp	Ser	Ile	Asp	Leu	Phe	Tyr		
65					70					75					80		
Gly	Ile	Ser	Leu	Phe	Ile	Cys	Thr	His	Arg	Arg	Glu	Gln	Trp	Leu	His		
				85					90					95			
Gly	Trp	Arg	Leu	Met	Thr	Ala	Ser	Leu	Ile	Ala	Cys	Val	Gly	Phe	Leu		
			100					105					110				
Leu	Phe	Pro	Leu	Lys	Phe	Ser	Phe	Ser	Arg	Pro	Thr	Thr	Glu	Gly	Leu		
	115					120					125						
Phe	Gly	Trp	Leu	Phe	Asn	Gln	Leu	Glu	Leu	Phe	Asp	Leu	Pro	Tyr	Asn		
	130					135					140						
Gln	Ala	Pro	Ser	Leu	His	Ile	Ile	Leu	Leu	Trp	Leu	Leu	Trp	Leu	Arg		
145				150						155					160		
Tyr	Ser	Ala	Tyr	Val	Ser	Gly	Tyr	Trp	Arg	Gly	Leu	Leu	His	Ile	Trp		
			165						170					175			
Ser	Val	Leu	Ile	Ala	Leu	Ser	Val	Leu	Thr	Thr	Trp	Gln	His	His	Phe		
	180							185					190				
Ile	Asp	Val	Leu	Thr	Gly	Phe	Ala	Val	Gly	Val	Ile	Leu	Ser	Tyr	Leu		
	195					200						205					
Leu	Pro	Val	Ser	Tyr	Arg	Trp	Arg	Trp	Gln	Pro	Asn	Gln	Asp	Arg	Tyr		
	210					215					220						
Ala	Arg	Lys	Leu	Phe	Gly	Tyr	Tyr	Leu	Thr	Gly	Ser	Ala	Leu	Phe	Ala		
225					230					235					240		
Leu	Ile	Ala	Ser	Leu	Leu	Gly	Gly	Ser	Phe	Trp	Ile	Leu	Leu	Trp	Pro		
				245					250					255			
Ala	Val	Ser	Leu	Leu	Met	Ile	Ala	Leu	Gly	Tyr	Ala	Gly	Leu	Gly	Ser		
	260							265					270				
Ser	Val	Phe	Gln	Lys	Gln	Pro	Asp	Gly	Arg	Met	Ser	Leu	Ser	Ala	Arg		
	275						280					285					
Trp	Leu	Ala	Pro	Tyr	Gln	Leu	Gly	Ala	Trp	Leu	Ser	Tyr	Leu	Trp			
	290				295					300							
Phe	Arg	Arg	Lys	Ser	Ala	Pro	Phe	Asn	His	Ile	Thr	Glu	Gly	Ile	Ile		
305				310					315						320		
Leu	Gly	Ser	Leu	Pro	Cys	Gln	Pro	Val	Thr	Ala	Val	Ser	Val	Leu	Asp		
				325					330					335			
Ile	Thr	Ala	Glu	Trp	His	Arg	Arg	Ser	Asp	Ala	Arg	Thr	Val	Asn	Tyr		
		340						345					350				
Val	Cys	Gln	Pro	Gln	Ile	Asp	Leu	Leu	Pro	Leu	Ala	Pro	Glu	Ala	Leu		

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<211> 174
<212> PRT
<213> Xenorhabdus bovienii
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<210> 44
<211> 466
<212> PRT
<213> Xenorhabdus bovienii
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			20					25					30		
Ile	Ile	Ala	Gly	Ile	Thr	Val	Gly	Val	Ile	Ala	Ile	Pro	Leu	Ala	Met
		35					40					45			
Ala	Leu	Ala	Ile	Gly	Ser	Gly	Val	Ala	Pro	Gln	Tyr	Gly	Leu	Tyr	Thr
	50					55					60				
Ala	Ala	Ile	Ala	Gly	Ile	Val	Ile	Ala	Met	Thr	Gly	Gly	Ser	Arg	Tyr
65					70					75					80

Ser Val Ser Gly Pro Thr Ala Ala Phe Val Val Ile Leu Tyr Pro Val  
 85 90 95  
 Ser Gln Gln Phe Gly Leu Ser Gly Leu Leu Ile Ala Thr Leu Met Ser  
 100 105 110  
 Gly Val Ile Leu Ile Val Met Gly Leu Ala Arg Phe Gly Arg Leu Ile  
 115 120 125  
 Glu Tyr Ile Pro Met Ser Val Thr Leu Gly Phe Thr Ser Gly Ile Ala  
 130 135 140  
 Ile Thr Ile Ala Thr Met Gln Val Gln Asn Phe Phe Gly Leu Lys Leu  
 145 150 155 160  
 Ala His Ile Pro Glu Asn Tyr Ile Asp Lys Val Val Ala Leu Tyr Gln  
 165 170 175  
 Ala Leu Pro Ser Leu Gln Leu Ser Asp Thr Leu Ile Gly Leu Thr Thr  
 180 185 190  
 Leu Leu Val Leu Ile Phe Trp Pro Lys Leu Gly Val Lys Leu Pro Gly  
 195 200 205  
 His Leu Pro Ala Leu Ile Ala Gly Thr Ala Val Met Gly Ala Met His  
 210 215 220  
 Leu Leu Asn His Asp Val Ala Thr Ile Gly Ser Ser Phe Ser Tyr Thr  
 225 230 235 240  
 Leu Ala Asp Gly Thr Gln Gly Gln Gly Ile Pro Pro Ile Leu Pro Gln  
 245 250 255  
 Phe Val Leu Pro Trp Asn Leu Pro Asp Thr His Ser Leu Asp Ile Ser  
 260 265 270  
 Trp Asn Thr Val Ser Ala Leu Leu Pro Ala Ala Phe Ser Met Ala Met  
 275 280 285  
 Leu Gly Ala Ile Glu Ser Leu Leu Cys Ala Val Ile Leu Asp Gly Met  
 290 295 300  
 Thr Gly Lys Lys His His Ser Asn Gly Glu Leu Leu Gly Gln Gly Leu  
 305 310 315 320  
 Gly Asn Ile Ala Ala Pro Phe Phe Gly Gly Ile Thr Ala Thr Ala Ala  
 325 330 335  
 Ile Ala Arg Ser Ala Ala Asn Val Arg Ala Gly Ala Thr Ser Pro Ile  
 340 345 350  
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 Ala Pro Met Leu Ser Tyr Leu Pro Leu Ala Ala Met Ser Ala Ile Leu  
 370 375 380  
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 385 390 395 400  
 Ile Arg His Ala Pro Lys Asp Asp Ile Ile Val Met Leu Leu Cys Leu  
 405 410 415  
 Ser Leu Thr Val Leu Phe Asp Met Val Arg Arg Asp His Tyr Arg His  
 420 425 430  
 Cys Ala Gly Ile Thr Pro Val Tyr Ala Gln Asn Cys Gln Tyr Asp Ser  
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 Asn Gln His Val Ile Phe Asn Lys Arg Gly Glu Arg Val Ile Gly Arg  
 450 455 460  
 Thr Asn  
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&lt;210&gt; 45

&lt;211&gt; 125

&lt;212&gt; PRT

&lt;213&gt; Xenorhabdus bovienii

&lt;400&gt; 45

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Glu Ser Ile Gly Ala Lys Thr Ser Asn Val Asn Asn Thr Ser Arg Glu  
 1 5 10 15  
 Cys Thr Thr Ala Ala Ile Gly Glu Val Ala Pro Ala Arg Thr Leu Ala  
 20 25 30  
 Ala Glu Arg Ala Ile Ala Ala Val Ala Val Met Pro Pro Lys Lys Gly  
 35 40 45  
 Ala Ala Ile Leu Pro Asn Pro Trp Pro Ser Ser Ser Pro Leu Glu Trp  
 50 55 60  
 Cys Phe Phe Pro Val Ile Pro Ser Arg Ile Thr Ala His Ser Asn Asp  
 65 70 75 80  
 Ser Ile Ala Pro Ser Met Ala Ile Glu Asn Ala Ala Gly Ser Asn Ala  
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 Asp Thr Val Phe Gln Leu Ile Ser Arg Glu Cys Val Ser Gly Lys Phe  
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 His Gly Arg Thr Asn Trp Gly Arg Met Gly Gly Met Pro  
 115 120 125

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 <211> 161  
 <212> PRT  
 <213> Xenorhabdus bovienii

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 Thr Ser Ser Leu Thr Ser Ala Glu Lys Gly Leu Leu Val Val Arg Ile  
 35 40 45  
 Asn Gly Pro Leu Phe Phe Ala Ala Glu Arg Ile Phe Ala Glu Leu  
 50 55 60  
 Arg Glu Lys Ser Ala Asp Tyr Gln Thr Ile Ile Met Gln Trp Asp Ala  
 65 70 75 80  
 Val Pro Val Leu Asp Ala Gly Gly Leu His Ala Phe Gln Gly Phe Val  
 85 90 95  
 Arg Glu Leu Gly Lys Glu Lys His Ile Val Val Cys Asp Ile Pro Phe  
 100 105 110  
 Gln Pro Leu Lys Thr Leu Ala Arg Ala Lys Val Met Pro Ile Glu Gly  
 115 120 125  
 Glu Leu Ser Phe Tyr Ala Thr Leu Pro Lys Ala Leu Lys Glu Met Ala  
 130 135 140  
 Val Asp Tyr Thr Pro Glu Val Cys Ala Ser Ser Glu Lys Ile Gln Gly  
 145 150 155 160  
 Gln

<210> 47  
 <211> 173  
 <212> PRT  
 <213> Xenorhabdus bovienii

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 Val Ala Ala Thr Val Thr Gln Asp His Leu Val Ile Ala Ala Phe Phe

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Phe	Phe	Asn	Ile	Asn	His	Ser	Thr	Gly	Phe	Arg	His	Arg	Phe	Asn	Gln	
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Ile	Gly	Leu	Ala	Gly	Lys	Glu	Gly	Trp	Lys	Leu	Asn	His	Ile	His	His	
				85					90					95		
Ile	Arg	Asp	Trp	Leu	Ser	Leu	Cys	Arg	Leu	Met	His	Val	Ser	Asp	Asn	
			100					105					110			
Phe	His	Ala	Glu	Gly	Leu	Phe	Gln	Phe	Leu	Lys	Asp	Phe	His	Pro	Leu	
		115					120					125				
Phe	Gln	Pro	Trp	Pro	Thr	Ile	Arg	Ala	Asp	Arg	Arg	Thr	Val	Ser	Leu	
	130					135					140					
Ile	Lys	Arg	Arg	Phe	Lys	Asn	Ile	Arg	Asn	Ala	Gln	Phe	Leu	Cys	His	
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<213> Xenorhabdus bovienii
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Gly	Asp	Ile 35	Lys	Val	Ala	Asn 40	Asp	Leu	Pro	Phe	Val	Leu 45	Phe	Gly	Gly
Met	Asn 50	Val	Leu	Glu	Ser	Arg 55	Asp	Leu	Ala	Met	Arg 60	Ile	Cys	Glu	His
Tyr 65	Val	Thr	Val	Thr	Gln 70	Lys	Leu	Gly	Ile	Pro 75	Tyr	Val	Phe	Lys	Ala 80
Ser	Phe	Asp	Lys 85	Ala	Asn	Arg	Ser	Ser 90	Ile	Arg	Ser	Tyr	Arg 95	Gly	Pro
Gly	Leu	Glu	Glu 100	Gly	Met	Lys	Ile	Phe 105	Gln	Glu	Leu	Lys 110	Gln	Thr	Phe
Gly	Val	Lys 115	Ile	Ile	Thr	Asp 120	Val	His 125	Glu	Pro	Ala	Gln 130	Ala	Gln	Pro
Val	Ala 135	Asp	Val	Val	Asp	Val 140	Ile	Gln	Leu	Pro	Ala 145	Phe	Leu	Ala	Arg
Gln 150	Thr	Asp	Leu	Val	Glu	Ala 155	Met	Ala	Lys	Thr	Gly 160	Ala	Val	Ile	Asn 165
Val	Lys	Lys 170	Pro	Gln	Phe	Val	Ser	Pro	Gly 175	Gln	Met	Gly 180	Asn	Ile	Val
Glu	Lys	Phe 185	Lys	Glu	Gly	Gly	Asn 190	Asp	Gln	Val	Ile	Leu 195	Cys	Asp	Arg
Gly	Ser	Asn 200	Phe	Gly	Tyr	Asp	Asn 205	Leu	Val	Val	Asp	Met 210	Leu	Gly	Phe
Gly	Val 215	Met	Gln	Gln	Ala	Thr	Gln 220	Gly	Ala	Pro	Val	Ile 225	Phe	Asp	Val
Thr 230	His	Ala	Leu	Gln	Cys	Arg	Asp 235	Pro	Leu	Gly	Ala 240	Ala	Ser	Gly	Gly
Arg	Arg	Ala 245	Gln	Val	Ala	Glu	Leu	Ala 250	Arg	Ala	Gly	Met 255	Ala	Val	Gly
Ile	Ala	Gly	Leu	Phe	Leu	Glu	Ala	His	Pro	Asp	Pro	Glu	Asn	Ala	Lys

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<210> 49
<211> 274
<212> PRT
<213> Xenorhabdus bovienii
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<210> 50
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<212> PRT
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<400> 50

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<210> 51
<211> 289
<212> PRT
<213> Xenorhabdus bovienii
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<400> 51															
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			20					25					30		
Asp	Pro	Asp	Asp	Glu	Arg	Asn	Cys	Phe	Leu	Glu	Val	Arg	Ala	Gly	Thr
		35					40					45			
Gly	Gly	Asp	Glu	Ala	Ala	Ile	Phe	Ala	Gly	Asp	Leu	Phe	Arg	Met	Tyr
	50					55					60				
Ser	Arg	Tyr	Ala	Glu	Ala	Arg	Arg	Trp	Arg	Val	Glu	Ile	Ile	Ser	Ala
65				70						75					80

Asn Glu Gly Glu His Gly Gly Tyr Lys Glu Val Ile Ala Lys Val Ser  
                     85                    90                    95  
 Gly Asp Gln Val Tyr Gly His Leu Lys Phe Glu Ser Gly Gly His Arg  
                     100                    105                    110  
 Val Gln Arg Val Pro Glu Thr Glu Ser Gln Gly Arg Ile His Thr Ser  
                     115                    120                    125  
 Ala Cys Thr Val Ala Val Met Pro Glu Ile Pro Glu Ala Glu Leu Pro  
                     130                    135                    140  
 Asp Ile Ser Pro Gly Asp Leu Lys Ile Asp Thr Phe Arg Ser Ser Gly  
                     145                    150                    155                    160  
 Ala Gly Gly Gln His Val Asn Thr Thr Asp Ser Ala Ile Arg Ile Thr  
                     165                    170                    175  
 His Leu Pro Thr Gly Ile Val Val Glu Cys Gln Asp Glu Arg Ser Gln  
                     180                    185                    190  
 His Lys Asn Lys Ala Lys Ala Met Ser Val Leu Ala Ala Arg Ile Arg  
                     195                    200                    205  
 Ala Ala Glu Met Arg Lys Arg Gln Glu Val Glu Ala Ser Glu Arg Arg  
                     210                    215                    220  
 Asn Leu Leu Gly Ser Gly Asp Arg Ser Asp Arg Asn Arg Thr Tyr Asn  
                     225                    230                    235                    240  
 Phe Pro Gln Gly Arg Val Thr Asp His Arg Ile Asn Leu Thr Leu Tyr  
                     245                    250                    255  
 Arg Leu Asp Glu Val Ile Glu Gly Lys Leu Asp Met Leu Ile Gln Pro  
                     260                    265                    270  
 Ile Ile Ile Glu Tyr Gln Ala Asp Gln Leu Ser Ala Leu Ser Glu Gln  
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&lt;210&gt; 52

&lt;211&gt; 37544

&lt;212&gt; DNA

<213> *Xenorhabdus bovienii*

&lt;400&gt; 52

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